



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,588	12/04/2001	Hiroyuki Miura	2224-0194P	6379

2292 7590 03/19/2003  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

ANDERSON, REBECCA L

ART UNIT PAPER NUMBER

1626

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/980,588

Applicant(s)

MIURA ET AL.

Examiner

Rebecca L Anderson

Art Unit

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) 4-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

Claims 1-16 and 18 are currently pending in the instant application. Claims 1-3 and 18 are rejected and claims 4-16 are withdrawn from further consideration as being drawn to non-elected subject matter. Claims 17 and 19-35 were cancelled in applicant's amendment filed 17 January 2003.

***Election/Restrictions***

Applicant's election with traverse of Group I, claims 1 (in part), 2, 3 and 18 (in part) in Paper No. 5 is acknowledged. The traversal is on the ground(s) that it would not be unduly burdensome on the Examiner to examine claims 1-16 and 18 together. This is not found persuasive because a burdensome search is not a requirement for lack of unity of invention under PCT Rules 13.1 and 13.2. The groups I-XVIII are all different processes with different steps and/or reaction conditions and/or products. The technical feature that is found in all the processes is the separation of an imide compound from a reaction mixture, which does not define a contribution over the art as can be seen on page 3 of the instant specification, and is therefore not a special technical feature under PCT Rule 13.2. Also, under Annex B, Part 1(e), the 18 different processes of groups I-XVIII, do not fall within any one of the combinations of claims of different categories in the same international application, which is used for determining unity of invention under Rule 13. However, even if a burdensome search was a requirement for lack of unity of invention under PCT Rule 13.1 and 13.2, the inventions are independent and distinct because there is no patentable co-action between the groups and a reference anticipating one member will not render another obvious. Each group is directed to art

Art Unit: 1626

recognized divergent subject matter, which require different searching strategies for each group. Moreover, the examiner must perform a commercial database search on the subject matter of each group in addition to a paper search, which is quite burdensome to the examiner.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3 and 18 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a hydrocarbon, an alcohol, an aldehyde, a ketone, an amide, a heterocyclic compound, a thiol, a sulfide, and an amide for the substrate does not reasonably provide enablement for any substrate. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make/or use the invention commensurate in scope with these claims.

As stated in the MPEP 2164.01 (a), "There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue."

Art Unit: 1626

In In re Wands, 8 USPQ2d 1400 (1988), factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have need described. They are:

1. the nature of the invention,
2. the state of the prior art,
3. the predictability or lack thereof in the art,
4. the amount of direction or guidance present,
5. the presence or absence of working examples,
6. the breadth of the claims,
7. the quantity of experimentation needed, and
8. the level of the skill in the art.

In the instant case,

The nature of the invention is the reaction of an imide compound with a substrate to prepare a reaction product and separate out the imide compound. The state of the prior art is that the reaction of an imide compound can be done with a substrate such as an isoprenoid (US 5,030,739, column 1, lines 39-59) and a hydrocarbon, alcohol, aldehyde and ketone (JP 8-038909, see the provided English translation, page 2). The predictability in the art is that a substrate can be a multitude of compounds that react in many different reaction conditions and have many different chemical properties. The amount of direction or guidance present in the specification and the working examples contain only hydrocarbon, alcohol, aldehyde, ketone, amide, heterocyclic, thiol, sulfide and amide substrates. The breadth of the claims, by the term "substrate" embraces a multitude of compounds that are known to one skilled in the art. Applicant has not disclosed every compound known to one skilled in the art as a substrate, which could be used in the instant claimed process and the quantity of experimentation needed to

Art Unit: 1626

find out if the multitude of possible substrates would work in the instantly claimed process is therefore undue. Therefore, the claims are not enabled for any substrate, but only those found in the specification, i.e. a hydrocarbon, an alcohol, an aldehyde, a ketone, an amide, a heterocyclic compound, a thiol, a sulfide, and an amide for the substrate. This rejection can be overcome by amending claim 1 to include only those substrates enabled in the specification as found on pages 23 and 24.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5, 030, 739.

The instant application claims a process for preparing a reaction product which comprises the steps of reacting a substrate in the presence of an imide compound having an imide unit represented by formula (1) thereby forming a reaction mixture, and subsequently separating said reaction product and said imide compound from said reaction mixture by: (A1) solvent-crystallizing the imide compound from said reaction mixture with at least one solvent selected from the group consisting of a hydrocarbon, a chain ether and water (claim 1). Claim 2 claims the process of claim 1 wherein the hydrocarbon of the solvent-crystallization step is an aliphatic hydrocarbon having 4 to 16 carbon atoms or an alicyclic hydrocarbon having 4 to 16 carbon atoms, and the

Art Unit: 1626

chain ether is a diC1-6alkyl ether or a C1-6alkyl C6-10aryl ether. Claim 3 claims the process of claim 2 wherein the imide compound is an aromatic imide compound, and the reaction product is an oxidation reaction product of an alicyclic hydrocarbon or an alicyclic alcohol and is soluble in the solvent for crystallization in the solvent-crystallization step. Claim 18 claims the process of claim 1 wherein the imide compound is an oxidation catalyst for oxidizing the substrate and the reaction product is an oxidation reaction product corresponding to the substrate.

This invention was described in the prior art US Patent No. 5, 030, 739 more than one year prior to the date of the instant application. US Patent No. 5, 030, 739 discloses the process of oxidizing an isoprenoid (column 1, lines 39-59), such as terpenes, sesquiterpenes and steroids (column 2, lines 43-57), such as  $\alpha$ -pinene (column 3, lines 28-36) in an inert ketone or ester in the presence of a N-hydroxydicarboxylic acid imide of the formula (I), such as N-Hydroxyphthalimide (NHPI) (Table 1, column 9, lines 42-59). The separation of the catalyst from the reaction mixture is disclosed on column 4, lines 50-62, wherein the catalyst can be separated (crystallized-out) from the reaction mixture with the aid of a non-polar solvent, such as hexane. An example of the oxidation of  $\alpha$ -pinene is found in example b), columns 5 and 6 the imide compound used was NHPI (see experiment (b) in Table 1). Another example of the oxidation of  $\alpha$ -pinene is found in example 4, columns 9-10, wherein  $\alpha$ -pinene is reacted with NHPI and the imide is separated out with hexane/diethyl ether, (i.e. the substrate  $\alpha$ -pinene, an alicyclic hydrocarbon which is soluble in the hexane/diethyl ether solution (as seen by the filtrate being evaporated to dryness and

Art Unit: 1626

the resulting residue containing the final oxidation product), is oxidized with the aromatic oxidation catalyst NHPI and then the catalyst is separated out by a solvent crystallization step with the aid of a solvent mixture of hexane, an alicyclic hydrocarbon having 6 carbon atoms, and diethyl ether, a diC1-6alkyl ether).

### ***Claim Objections***

Claims 1-3 and 18 are objected to as containing non-elected subject matter. This objection can be overcome by deleting the non-elected subject matter of separation processes (A2) and (B) from claim 1.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rebecca L. Anderson whose telephone number is (703) 605-1157. Mrs. Anderson can normally be reached Monday through Friday 7:00AM to 3:30PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Joseph McKane, can be reached at (703) 308-4537.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone numbers are (703) 308-1235 and (703) 308-0196.



Art Unit: 1626

A facsimile center has been established. The hours of operation are Monday through Friday, 8:45AM to 4:45PM. The telecopier numbers for accessing the facsimile machine are (703) 308-4242, (703) 305-3592, and (703) 305-3014.



---

Rebecca Anderson  
Patent Examiner  
Art Unit 1626, Group 1620  
Technology Center 1600



---

Joseph McKane  
Supervisory Patent Examiner  
Art Unit 1626, Group 1620  
Technology Center 1600